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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,172	07/11/2003	John McCollum	ACT-367	5001
28661	7590	06/06/2005	EXAMINER	
SIERRA PATENT GROUP, LTD. P O BOX 6149 STATELINE, NV 89449			LANDAU, MATTHEW C	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/619,172	Applicant(s) MCCOLLUM ET AL.	
	Examiner Matthew Landau	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.  
     4a) Of the above claim(s) 5, 6 and 9-16 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 and 8 is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

The drawings were received on April 1, 2005. These drawings are acceptable.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by London (US Pat. 6,114,731).

Regarding claims 1 and 2, as best the examiner can ascertain the claimed invention, Figure 3A of London discloses a transistor formed on a semiconductor substrate 300 of a first conductivity type (p-type) and comprising: a well 206/306 formed in said substrate and doped with said first conductivity type to an impurity level higher than that of said substrate (col. 6, lines 10-13 and lines 40-44); a drain region 212b doped to a second conductivity type (n-type) opposite to said first conductivity type disposed in said well; a pair of opposed source regions 212a/312 doped to said second conductivity type disposed in said well and separated from opposing outer edges of said drain region by channel regions, said pair of opposed source regions electrically coupled together; a pair of gates 232/332 disposed above and insulated from said channel regions, said gates electrically coupled together; and a region of said well disposed

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below said drain region (portion of substrate between regions 206 and 306) doped to the same concentration as the substrate, wherein the region of said well doped to an impurity level higher than that of said substrate overlaps said drain region, the overlap being about equal to the channel length of said transistor. Note that the product disclosed in Figure 3A of London is essentially the same as the product disclosed in Figure 6 of the instant application, which discloses p-well regions 320 separated by region 322. As disclosed in the specification, region 322 is doped to same concentration as the substrate (page 10, lines 1 and 2). Therefore, in the final product, region 322 is equivalent to an extension of the substrate. Since this is a device claim, the manner in which the device is made does not patentably distinguish the claimed invention. Therefore, regions 206 and 306 of London can be considered a single well with a doped region (portion of the substrate between regions 206 and 306) in the well. This interpretation is consistent with that of Applicant's specification.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title; if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over London in view of Rhee (US Pat. 6,395,941).

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Regarding claim 3, Figure 3A of London discloses a p-well 206/306 disposed in the p-type substrate 300, said p-well doped to a higher concentration than said substrate (col. 6, lines 10-13 and lines 40-44) and having a substrate-doped portion (portion of substrate between 206 and 306) therein doped to about the same concentration as said substrate, said substrate-doped portion extending vertically from an upper surface of said p-well to said substrate; an N<sup>+</sup> drain region 212b disposed in said substrate-doped portion of said p-well, a periphery of said N<sup>+</sup> drain region extending laterally into said p-well beyond an outer boundary of said substrate-doped portion of said p-well, a pair of N<sup>+</sup> source regions 212a/312 spaced apart from opposite edges of said N<sup>+</sup> drain region at a distance sufficient to form first and second channels, each of said source regions electrically coupled together; a first gate 232 disposed above and insulated from said first channel; and a second gate 332 disposed above and insulated from said second channel and electrically coupled to said first gate, wherein the portion of said p-well doped to a higher concentration than said substrate overlaps said drain region, the overlap being about equal to the channel length of said transistor. Note that the product disclosed in Figure 3A of London is essentially the same as the product disclosed in Figure 6 of the instant application, which discloses p-well regions 320 separated by region 322. As disclosed in the specification, region 322 is doped to same concentration as the substrate (page 10, lines 1 and 2). Therefore, in the final product, region 322 is equivalent to an extension of the substrate. Since this is a device claim, the manner in which the device is made does not patentably distinguish the claimed invention. Therefore, regions 206 and 306 of London can be considered a single well with a doped region (portion of the substrate) in the well. This interpretation is consistent with that of Applicant's specification. The difference between London and the claimed invention is the

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source and drain regions surrounded by lightly doped N regions. Figure 5 of Rhee discloses source and drain regions, wherein each source/drain region consists of a heavily doped portion surrounding by a lightly doped portion. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of London by using the lightly doped regions of Rhee. The ordinary artisan would have been motivated to modify London in the manner described above for the purpose of reducing the electric field in the vicinity of the channel region, thereby reducing hot electron effects, which is well known in the art.

Regarding claim 4, Figure 3A of London discloses said periphery of said N<sup>+</sup> drain region extends laterally into said p-well beyond said outer boundary of said substrate-doped portion of said p-well a distance about equal to that of said first and second channels.

#### ***Allowable Subject Matter***

Claims 7 and 8 are allowed.

The reasons for allowance were provided in the Office Action mailed on December 30, 2004.

#### ***Response to Arguments***

Applicant's arguments filed April 1, 2005 have been fully considered but they are not persuasive.

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In response to Applicant's arguments that London does not disclose the limitation "where the overlap is about equal to the channel length of the transistor", it can be considered that the drain 212b of London overlaps regions 206 and 306 by an amount "about" equal to the channel length since Applicant has not defined the term "about" in a manner that would preclude this broad, but reasonable, interpretation.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

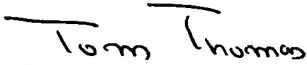
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (571) 272-1731.

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The examiner can normally be reached from 8:30 AM - 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should any questions arise regarding access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
TOM THOMAS  
SUPERVISORY PATENT EXAMINER

Matthew C. Landau

Examiner

May 31, 2005